

From wang!elf.wang.com!ucsd.edu!info-hams-relay Fri Mar 29 04:20:39 1991 remote
from tosspot
Received: by tosspot (1.64/waf)
via UUCP; Fri, 29 Mar 91 05:15:28 EST
for lee
Received: from somewhere by elf.wang.com id aa06053; Fri, 29 Mar 91 4:20:38 GMT
Received: from ucsd.edu by relay1.UU.NET with SMTP
(5.61/UUNET-shadow-mx) id AA08263; Thu, 28 Mar 91 19:06:08 -0500
Received: by ucsd.edu; id AA16863
sendmail 5.64/UCSD-2.1-sun
Thu, 28 Mar 91 13:55:34 -0800 for brian
Received: by ucsd.edu; id AA16809
sendmail 5.64/UCSD-2.1-sun
Thu, 28 Mar 91 13:55:03 -0800 for /usr/lib/sendmail -oc -odb -oQ/var/spool/
lqueue -oi -finfo-hams-relay info-hams-list
Message-Id: <9103282155.AA16809@ucsd.edu>
Date: Thu, 28 Mar 91 13:55:00 PST
From: Info-Hams Mailing List and Newsgroup <info-hams-relay@ucsd.edu>
Reply-To: Info-Hams@ucsd.edu
Subject: Info-Hams Digest V91 #249
To: Info-Hams@ucsd.edu

Info-Hams Digest Thu, 28 Mar 91 Volume 91 : Issue 249

Today's Topics:

[chuck: a few fundamental questions about RF signals]
Antenna matching problem for novice
Apartment & Heath HW-9 QRP CW xcvr?
Heath HW-2-M 2m HT mini-review
large 110->220 transformers (3 msgs)
Newer HF rigs
RC on 6 meters

Vacuum tube question/quest (Attn: OOTs & gov't surplus fans) (2 msgs)
What's allowed, what's not (and where) (was RC on 6 meters)
Where are the DX and WAS nets!?!?
WWV and Solar Flux info

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 28 Mar 91 18:36:12 GMT
From: news-mail-gateway@ucsd.edu
Subject: [chuck: a few fundamental questions about RF signals]
To: info-hams@ucsd.edu

>>> I wonder if the
>>> same RF signal can travel either through copper wire or through air. In
>>> other words, is there no difference between RF signal (say, for channel
>>> 4) that my TV receives from the air and RF signal (say, for channel 4)
>>> coming from CATV company through cable?

.>
>>None at all, except that one is an electromagnetic wave traveling through
>>the air and the other is an alternating current traveling through a
>>wire.

>I'm sorry Perry, but you are wrong. The "signal" travelling thru the coax
>is an electro-magnetic wave.

>The only significant difference between it, and the one travelling thru the
>air is the speed of propagation. E-M waves travel slower in any medium other
>than free space. (eg. vacuum).

This question is too age old (ie aether theory etc) and fundamental for anyone to be right or wrong. Anyone who is sure he is right hasn't thought enough about the problem. While alternating currents through wires and electromagnetic waves through space (or aether) are certainly related, and each can spawn the other, it would be going a bit too far to say that they are the same (although I realize that 99% of the experts commonly do just that). Alternating currents through wires and solutions clearly involve movement of electrons or ions, whereas em waves in space do not. I know you can talk about the partical nature of waves (ie photons) and the wave nature of particals, but this is clearly an attempt to use mathematics to "explain" that which can't be understood. Although, as others have mentioned, there is no clearcut frequency where the difference between EM radiation and AC becomes apparent, it would seem to be somewhere in the microwave-infra red area of the spectrum. Microwaves don't really travel through wires in the same way that lower frequencies do, but rather travel in the skin of the wire, hence the use of waveguides. Once you get up into the visible wavelengths, the AC analogy disapears.

I like to look at EM waves as being more magnetic than electric, but inducing the electric component whenever it encounters mass. At the other extreme, currents through wires are more electric in nature, although they clearly generate associated magnetic fields.

I know that most people will not agree with what I have said, and I am not trying to change anyones opinion on the mater, I just take objection to saying someone is wrong for trying to understand without blindly beleiving in the mathematics.

A

Date: 26 Mar 91 14:30:22 GMT
From: usc!rpi!news-server.csri.toronto.edu!utgpu!utzoo!censor!comspec!tvcent!
lethe!yunexus!landolt@ucsd.edu
Subject: Antenna matching problem for novice
To: info-hams@ucsd.edu

I am having trouble with matching an antenna and would like a bit of help.
I am studying for my amateur license, and so I am just trying to get a handle on these things.

First off, this question pertains to a 1/4 wave CB antenna that I had bought. Although some people may be insulted at the mention of these devices in an area devoted to REAL radio, I felt it important to ask people who would know.

I had bought an antenna that was 'percisly matched at the factory". So, this is a fibreglass, top-load antenna with a 10ft cable (the whole mess is set for an impedance of 50 ohms). I remember in my readings that the antenna cable becomes part of the antenna (for the sake of matching/tuning), and that changing the cable length with change the match.

My question is: How would I match the impedance if I changed the cable length? Ie, from 10ft to 15ft? Do I need to get a SWR meter and a matching box? Add some Impedence matching resistors to the line? (Radio Shack sold an 8hm, 20W one). Is there a set formula for calculating the resitance needed to re-match the line?

Thanks in advance.

--
J. Paul Landolt | If it ain't broke, don't fix it...
Computing & Communications Services | ...unless you're a consultant
York University - Toronto, Canaidia | -----
InterNet: landolt@nexus.YorkU.CA | My opinions. All mine. So sue me.

Date: 28 Mar 91 20:09:18 GMT
From: sdd.hp.com!zaphod.mps.ohio-state.edu!samsung!umich!wsu-cs!CMS.CC.WAYNE.EDU!
MEDELMA@ucsd.edu
Subject: Apartment & Heath HW-9 QRP CW xcvr?
To: info-hams@ucsd.edu

I have been looking at the Heathkit HW-9, which is a \$250, 5W CW-only transciever kit, which has power supply, antenna match, SWR, etc. for a total package cost of \$400. I would then just string a wire in the apartment, and give it a go.

Does anybody have experience with this radio? Will I be able to talk to anybody outside a few miles with this proposed setup?

The HW-9 is a fine radio, but QRP can be a bit of a challange for the newcomer. I started out with a 70 watt (input) Ten-Tec Century 21 that I bought used for under \$200. For CW only operation, it's still a fabulous rig. Solid state, great filters, built in power supply.

--mike ke8yy

Date: 28 Mar 91 18:55:26 GMT
From: sdd.hp.com!uakari.primite.wisc.edu!caen!uwm.edu!ux1.cso.uiuc.edu!moskva!
banko@ucsd.edu
Subject: Heath HW-2-M 2m HT mini-review
To: info-hams@ucsd.edu

Well, I finally got my Heath HW-2-M 2m HT yesterday, and am sufficiently pleasantly surprised by it that I thought I would post a mini-review about it. The first important *surprise* is that it has 130-170 MHz rcv range... this is *not* mentioned in the catalog I got, and I had fretted long an hard about whether to buy an HT which was, I thought, limited to 144-148. I finally decided to give it a try, since Heath has a liberal 6 month return policy (which beats the pants off of some dealers' 15% re-stocking fees)... Since ham dealers are few and far between, you are almost forced to buy stuff sight-unseen. (Especially if you are an impatient newcomer like me.) Most of the university club hams here are university students and either can't afford an HT, or they have an Icom. (So there is not a lot of opportunity to see a variety of radios.)

The HW-2-M has 20 memories with memory and vfo scan modes, a \$65 CTCSS option, a standard 7.2V 700mA-h battery for 0.35 & 2W operation as well as optional 12V battery (or external DC supply) for 5W operation. It also has standard repeater offsets, as well as duplex and simplex capability.

The unit is small and light, but has a solid feel to it.

The radio has rotary volume-on/off and vfo tuning knobs. There are several features for changing the tuning step for quick manual tuning. In addition, frequencies can be entered from the keypad in either X.XX or XX.XX5/0 format and any combination in between (1XX.XX5/0, etc.). I am a newly licensed Tech with little repeater or 2m experience, so I can't comment too much on the sensitivity and range of the radio, but Heath seems to be pretty proud of these specs and publishes a 0.158 uV for 20 db (?) SINAD sensitivity (I might have the 20 db wrong... if there is a standard db level for this spec, that's probably what it is.) in the amateur band.

Anybody else have experience with this radio and/or comments?

73 de Brad
KB8CNE/KT

--

=====
Brad Banko, Theoretical Biophysics, Beckman Institute
Dept of Physics, University of Illinois--Urbana-Champaign
banko@lisboa.ks.uiuc.edu, (217)-244-1851, 328-4932

Date: 28 Mar 91 19:07:23 GMT
From: sdd.hp.com!zaphod.mps.ohio-state.edu!sol.ctr.columbia.edu!emory!
athena.cs.uga.edu!mcovingt@ucsd.edu
Subject: large 110->220 transformers
To: info-hams@ucsd.edu

OK, here goes:

(1) Transformers are easier to find in Europe than here. If nothing else, you avoid the expense of transporting a large, heavy object across the Atlantic.

(2) Each appliance will be rated for either "60 Hz" or "50-60 Hz". Your clock radio almost certainly uses the line frequency for timing and will run at 5/6 of the correct speed when on 50 Hz.

(3) Some computers and fax machines can be internally switched over to 220 volts without an external transformer. In fact, there are even a few computers that are intelligent enough to run on any voltage from 100 to 250 volts without your having to even set a switch.

--

Michael A. Covington | Artificial Intelligence Programs
The University of Georgia | Athens, GA 30602 U.S.A.

Date: 28 Mar 91 20:54:51 GMT
From: pacbell.com!att!linac!pacific.mps.ohio-state.edu!zaphod.mps.ohio-state.edu!
rpi!news-server.csri.toronto.edu!utgpu!cunews!bnrgate!bmers95!bmerh27!
chatel@ucsd.edu
Subject: large 110->220 transformers
To: info-hams@ucsd.edu

Hi,

I have recently received a 220V to 110V 300W transformer from Knapco in Clearwater, Florida. Got it within a week of ordering (and I'm in Canada...). The thing is big, heavy, and looks like a tank could roll over it with no trouble. Cost me something like 53.95 \$US with shipping. And yes (I have a Mac Classic), it fits exactly in a standard Mac Bag in the spot above the video screen where the handle is. It does add 5 pounds to the bag, though...

I'm sorry I don't have their exact address with me, but I'll try to get it at home tonight. I'll try to send another item Monday.

Regards,
Marc.

Date: 28 Mar 91 20:58:04 GMT
From: swrinde!elroy.jpl.nasa.gov!news.larc.nasa.gov!grissom.larc.nasa.gov!
kludge@ucsd.edu
Subject: large 110->220 transformers
To: info-hams@ucsd.edu

In article <gbwV9z_00jVM4FsFs9@andrew.cmu.edu> dh1s+@andrew.cmu.edu (Donn Hoffman) writes:

>Power in Spain is 220v/50hz. The appliances are all 110v. Some are
>labeled 60hz, some are labeled 50/60hz.

>

>1. I am reluctant to trust my fax and mac to the cheap travel
>transformers sold at Akbar & Jeff's Luggage Hut. Is there some sort
>of larger, reliable transformer I can get to plug all (or several) of
>my appliances into?

Most of those devices are not transformers, but either diodes or dropping resistors. This is not good. Your best bet for reliability is to get some of the Sola Electric 110-220 units, which any good industrial electronics place will carry. Or get a large 220 transformer with a center

tap and use it as an autotransformer, ignoring the secondary. C&H surplus is a good place to look for such things, but because of the weight you are probably better off purchasing them locally.

>2. Can someone recommend a store in New York City (or mailorder)
>where I can buy such a transformer (for best price)?

I can't offhand, But I am sure that looking in the yellow pages under electrical supplies is a good start. Can I say yellow pages on the net?

>3. Is 60Hz going to screw up my 50Hz clock radio? If so, can anything
>be done about this?

It probably will screw it up, unless it's crystal controlled. And it is possible to replace gears to increase the speed to a normal rate, but first of all you'll notice a problem with the motor generating additional heat, and second of all it will cost you a whole lot more money than buying a new clock radio.

--scott

Date: 28 Mar 91 16:51:47 GMT
From: w8grt@uunet.uu.net
Subject: Newer HF rigs
To: info-hams@ucsd.edu

rusty@anasaz.UUCP (Rusty Carruth) writes:

> In article <randall.668675744@seashore> randall@informix.com (Randall Rhea) w
> ->.... The problem is that a used TR-7 can
> ->go for as much as \$700 or more (I saw one sold for that price at a
> ->recent flea market). For a couple of hundred more, you can get a
> ->new Icom 735, ...
>
> Or, if you watch around, you can get a used 735 for \$700 to \$800, including
> the power supply and other stuff you would otherwise have had to pay extra
> for.

The TR-7 is one heckuva transceiver. If you homebrewed a digital synthesizer to use in place of the external VFO, you'd have a fine unit the equal of most newer rigs. The 100 hz resolution and the analog VFO are the only areas in which newer rigs top it significantly.

Date: 28 Mar 91 16:09:18 GMT
From: pa.dec.com!shlump.nac.dec.com!koning.enet.dec.com@decwrl.dec.com

Subject: RC on 6 meters
To: info-hams@ucsd.edu

|>I have my own RC question: The FCC regs state that an Amateur "may"
|>operate a radio controlled "model craft" under the following
|>conditions: 1) Less than 1 watt. 2) Callsign and Name/address affixed
|>to transmitter. 3) No ID required.

|>
|>My question: Do these restrictions still apply if you are willing
|>to ID in the normal manner every 10 minutes?

|>
|>AL N1AL

|>
One of these days I'll have to get another copy of the regs and keep
it at work... but anyway... The way I recall the rules is that the 1 Watt,
call + name tag rule is mentioned in the ID rules, and exempts you from
having to ID. If that's right, then you could run more power so long as
you do ID.

paul, n1ld

Date: 28 Mar 91 16:33:53 GMT
From: gatech!prism!mailer.cc.fsu.edu!geomag!zateslo@ucsd.edu
Subject: Vacuum tube question/quest (Attn: 00Ts & gov't surplus fans)
To: info-hams@ucsd.edu

In article <1991Mar28.040229.4432@mendelson.com> gsm@mendelson.com (Geoffrey S.
Mendelson) writes:

>
>I believe tube numbers were standardized in the 30's with us numbers being
>
>nTTxxm
>
>n being the number of elements (including the filament) therefore:
>diodes were 3, triodes were 4, etc, dual triodes were 7.
>
>TT was a type designator all I remember is that L were audio amplifiers.
>
>xx was a numeric designation to keep different types of the same nTT combination
>seperate.
>
>mm was a modifier such as a (second version) b (third version), GT glass tube.
>
>i.e.
>

>6L6GTA was a pentode audio amplifier with a glass tube (second version)
>
>Non filament tubes used 0 as element count:
>
>0A2 was a voltage regulator (argon gas lamp actually)
>
>0B1 was a a Geiger-Muller (radiation detector) tube.
>

Not exactly. Using the nTTxxm model, n is the approximate filament voltage, xx is the number of active elements, and TT is a one-or two-letter serial sequence to distinguish tubes with the same n and xx. m is indeed a modifier (G=glass, GT=small glass, W=ruggedized military version, X and Y=low-loss base). Tubes with "S" as the first letter of the TT are "single-ended" versions of older types, e.g. 6SQ7 is a single-ended version of the 6Q7 (which had a grid cap). Tubes with n=0 (0A2) had no filament.

There are many exceptions to the system (6SL7 is -not- similar to the 6L7, the 6BZ7 and 6BZ8 have the same number of elements, etc) but it is still a good indicator.

-Ted Zateslo, W1X0, tube lover (I like CMOS too)
zateslo@geomag.gly.fsu.edu

Date: 28 Mar 91 20:52:49 GMT
From: pacbell.com!att!cbnews1!moss!feg@ucsd.edu
Subject: Vacuum tube question/quest (Attn: 00Ts & gov't surplus fans)
To: info-hams@ucsd.edu

In article <1991Mar26.093904.47160@cc.usu.edu>, slp9m@cc.usu.edu writes:
> I have a Navy surplus LF/VLF/MF receiver (14 to 600 kHz), type AN/FRR-21.
> It was operational when I purchased it but has since died. I traced the
> problem to a dead tube.
>
> The tubes are tiny little things with wires for pins. They are held to
> circuit boards with clips and the "pins" are soldered onto terminal posts.
> I have a manual and it designates the tubes with numbers like 5899, 5636,
> 5719 or 5840 (it's the 5840 that's dead).
>

These are subminiature tubes which were originally designed for military equipment but later entered the industrial market, thus the 5000 series numbers.

They are an outgrowth of the proximity fuze tubes of WWII (although

the tubes you mention had heater/cathodes instead of filaments and they wouldn't be able to stand the 30,000 G's of being shot from 5 inch guns).

They were made by Sylvania and it happens, ahem, that I was the designer of a few of them, the 5719 (a hi-mu triode, I believe), and the 5840 (a 6AK5 equivalent--hi Gm pentode), that you have named.

Since I also worked for RCA I can tell you that these tubes are NOT pencil tubes (pencil tubes were a cross between conventionally arranged cathode and grid design with another design known as a planar tube). Pencil tubes were made by RCA.

I probably still have old catalogs of these tubes and could supply you the pinouts, if you are still looking for that information. I might even have a 5840 among my collection of old tubes.

Boy! Does this ever show my age!

Forrest Gehrke feg@dodger.att.com
K2BT

Date: 28 Mar 91 17:12:41 GMT
From: pa.dec.com!shlump.nac.dec.com!sousa.enet.dec.com!sndpit.enet.dec.com!
smith@decwrl.dec.com
Subject: What's allowed, what's not (and where) (was RC on 6 meters)
To: info-hams@ucsd.edu

In article <14570025@hpnmdla.hp.com>, alanb@hpnmdla.hp.com (Alan Bloom) writes...
>I have my own RC question: The FCC regs state that an Amateur "may"
>operate a radio controlled "model craft" under the following
>conditions: 1) Less than 1 watt. 2) Callsign and Name/address affixed
>to transmitter. 3) No ID required.
>
>My question: Do these restrictions still apply if you are willing
>to ID in the normal manner every 10 minutes?

I'm going to be using some combination of 2M, 220, 440, 900, and 1200 MHz to support my teleoperations stuff, and after looking things over carefully, I would say that the R/C bands are for the usual Pulse-Position-Modulated hobbyist R/C stuff, but if you are using (say) packet to communicate between two computers (one at the base and one on the vehicle), you are IDing every frame, and it's not R/C any more. Just don't call it R/C and you are all set. It seems the Right Thing to do would be use experimental subbands,

ID in a universally decodable fashion (IE: use CWID on FMTV or 9600-baud packet, because to most hams it'll look like noise or interference), and talk to hams (and frequency co-ordinators) in your area ahead of time, so they know what's up.

BTW: This brings up another point I've seen made: If you search diligently through the FCC rulebook, you can probably find prohibitions against just about anything you want to do. On the other hand, if you look for rules that allow you to do the same things, you will find them too. [If you ask the FCC for 'permission' it will probably be denied, but if you run R/C stuff in the experimental subbands on (say) 440 the FCC won't care (or know)].

Which brings up another point: If some self-appointed band policeman says to me "Hey, you can't do that here!" do I have to respond or can I just ignore him? I would think I'd only have to respond to the FCC if they got complaints and bothered to investigate....

Willie Smith
smith@sndpit.enet.dec.com
smith%sndpit.enet.dec.com@decwrl.dec.com
{Usenet!Backbone}!decwrl!sndpit.enet.dec.com!smith

Date: 28 Mar 91 20:44:18 GMT
From: pacbell.com!att!linac!pacific.mps.ohio-state.edu!zaphod.mps.ohio-state.edu!
rpi!luigi@ucsd.edu
Subject: Where are the DX and WAS nets!?!?
To: info-hams@ucsd.edu

In article <1991Mar27.191648.1238@ka3ovk> albers@ka3ovk.UUCP (Jon Albers) writes:
>Where are the DX and WAS nets? I am looking for info on nets which meet
>
>If there is enough interest, I would be willing to keep a database up and
>make monthly posting of net listings, but I need info from you guys!
>
I agree it is a great idea, but herein lies the problem I have with it. Every time I go down to Newington, I say "You know, if you guys had a BBS (phone line) with member access to, say, the Repeater Directory or the Net Directory (updates are way too infrequent, by the way) A lot of hams who aren't league members might just join. Now I don't want to start a league bash because I feel the league tries hard on many issues and there are many, many great people who are involved with the ARRL. Right now I know that the Repeater directory is updated by a secret (well, I mean it is not for use by non-repeater coordinators and people working on the RDirectory) BBS at ARRL HQ, so the whole thing is already online!

Well, without being one to cry about a problem without offering to get

involved. I will forward any e-mail (or Snail Mail) to the appropriate league officer/director/whatever regarding your feelings on this matter. I know, I know.. I can hear you now "They will never because.... grumble grumble." Well then just don't try for change :-)

Of course you can send stuff to your division director, yourself.

My goal is to have the league operate an online ham-radio oriented information service for it's members (just information services)

Snail: 50 Woodland Rd. Holden, MA 01520
E-mail: luigi@rpi.edu, luigi@RPITSMTS.BITNET

73 Luigi Giasi

Date: 28 Mar 91 15:28:59 GMT
From: swrinde!zaphod.mps.ohio-state.edu!rpi!clarkson!manninfj@ucsd.edu
Subject: WWV and Solar Flux info
To: info-hams@ucsd.edu

Path: spiff.soe!gomer
Date: 28 Mar 91 08:38:56 GMT
Message-ID: <gomer.670149536@spiff.soe>
Newsgroups: rec.radio.amateur.misc
Distribution: world
Subject: Solar Flux Index & WWV
Keywords: WWV

Could someone please start posting the Solar Flux Index reports from WWV again. Dave Bray, K2LMG, and I are going to try to keep a database of the trend daily. Some days (yesterday being a prime example) neither of us are able to pick WWV out from the mess. Also if someone has a set for any time period and would be willing to mail it to us that would also be appreciated.

'73!

Paul Kronenwetter - N2KIQ | Amateur Packet: N2KIQ@KA2JXI.NY.USA
kronenpj@clutx.clarkson.edu | N2KIQ@BBSJXI.NEDA.USA
kronenpj@clutx.bitnet | Snail Mail: Clarkson University
Voice:315-268-4134|St Lawrence Cty: | Box 6942
Buffalo: 146.910- |444.15+|146.910- | Potsdam, NY
146.580| 444.000+ |\//\//\|146.580 | 14699-6942

--

-Archangel
manninfj@clutx.clarkson.edu

The opinions expressed herein are my own. In the near future they
will become facts, and in an eon or so they will become law.

Date: 28 Mar 91 16:33:00 GMT
From: sdd.hp.com!apollo!hays@ucsd.edu
To: info-hams@ucsd.edu

References <z65f9vg@rpi.edu>, <50958e3c.20b6d@apollo.HP.COM>, <f76f6q@rpi.edu>
Reply-To : hays@apcihq.UUCP (John Hays)
Subject : Re: the Freeband below 10 meters

In article <f76f6q@rpi.edu> luigi@aix01.aix.rpi.edu (John L Luigi Giasi) writes:
>In article <50958e3c.20b6d@apollo.HP.COM> hays@stargaze.UUCP (John Hays) writes:
>>Maybe we should get unattended automatic packet authorized for 28.000 to
>>28.100 Mhz. (up to 9600 baud?) --- that would put up a nice guard band
>>to contain the "freebanders" ????
>
>I do believe that you were only joking about the guard band concept,
> especially since the bottom 100kHz is where DX CW lives. But this can

No I wasn't joking ... DX CW isn't going to be of much use if the 10m band
is overrun by 'freebanders' .. Just move CW DX upband. We must evolve as
conditions and technology change. Just because some mode has traditionally
occupied some portion of the band doesn't mean it has to stay there.

John KD7UW
hays@hpuslua.nsr.hp.com

Date: 28 Mar 91 20:19:48 GMT
From: epic!karn@bellcore.bellcore.com
To: info-hams@ucsd.edu

References 415-688-8269), <9103270633.AA08679@ucsd.edu>, <9933@jjmhome.UUCP>
Reply-To : karn@thumper.bellcore.com
Subject : Re: ICOM AG-25 and AG-35 PREAMPS

In article <9933@jjmhome.UUCP>, km3t@jjmhome.UUCP (Dave Pascoe) writes:
|> If this preamp is like some of the other ones produced by the major
|> transceiver manufacturers, then I bet the NF is in the 1-2 dB range.

I would like to suggest that the amateur community move away from

specifying preamplifier performance in terms of "noise figure" and toward "noise temperature".

Preamp "noise figures" make intuitive sense only when the input antenna noise (actually, the RF noise picked up by the antenna) is on the order of the blackbody radiation from objects at 290K ("room temperature"). When this is the case, the noise figure directly implies the lowering of the signal-to-noise ratio due to the preamp's own noise contribution.

But when the antenna noise temperature is much greater or less than 290K, a given preamp noise figure will have, respectively, a much smaller or larger effect on the system's signal to noise performance, and quickly computing the actual effect of a given NF can be tricky.

This is especially true in satellite reception where the antenna usually looks at a sky that is much "colder" than the earth, so a 1 dB change in preamp NF translates into a much larger change in receiver S/N ratio. Many amateurs who are used to translating NF directly into S/N miss this point and thereby tend to underestimate the importance of low preamp noise figures in satellite operation. Conversely, they tend to overestimate the importance of low preamplifier noise figures when the external signal levels are high, e.g., on HF.

On the other hand, when noise temperatures are used, you can compute the overall performance of a system by simply adding the noise temperature contributions of each element of the system: sky noise, antenna noise, feedline noise and preamp noise temperatures all add to produce a total "system" noise temperature. By comparing the relative amounts of each you can readily see where the major noise sources are, so you know where you should concentrate your efforts.

Converting NF to noise temperature is reasonably straightforward, although it takes a calculator:

$$T = 290 * (10^{(NF/10)} - 1)$$

where

T = noise temperature in Kelvins
NF = noise figure in dB

Note the constant "290", indicating the implicit connection between noise figure and the input noise levels associated with "room temperature", even though these noise levels are seldom seen in practice.

So what say? Can we abandon noise figure in favor of noise temperature

measurements?

Phil

PS. I'll resist the urge to flame about the use of the term "hot" to describe preamps or receivers with good performance... :-)

End of Info-Hams Digest
